

PC8110xNSZ Series

Photocoupler with Built-in Schottky Barrier Diode

■ Features

1. High speed response at turn-off time due to built-in schottky barrier diode
2. 4-pin DIP package
3. Isolation voltage (Viso : 5kV_{rms})

■ Applications

1. Refrigerators
2. Air conditioners
3. Various home appliances

■ Rank Table

Model No.	Rank mark	I _c (mA)	Conditions
PC81100NSZ	A, B, C or no mark	2.5 to 20	I _F =5mA V _{CE} =5V T _a =25°C
PC81101NSZ	A	3.0 to 6.0	
PC81102NSZ	B	5.0 to 10	
PC81103NSZ	C	7.5 to 15	
PC81105NSZ	A or B	3.0 to 10	
PC81106NSZ	B or C	5.0 to 15	
PC81108NSZ	A, B or C	3.0 to 15	

■ Absolute Maximum Ratings (T_a=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	^{*1} Peak forward current	I _{FM}	1.0	A
	Reverse voltage	V _R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V _{CEO}	70	V
	Emitter-collector voltage	V _{ECO}	0.1	V
	Collector current	I _C	30	mA
	Collector power dissipation	P _C	150	mW
	Total power dissipation	P _{tot}	200	mW
	Operating temperature	T _{opr}	-30 to +100	°C
	Storage temperature	T _{stg}	-55 to +125	°C
	^{*2} Isolation voltage	V _{iso}	5	kV _{rms}
	^{*3} Soldering temperature	T _{sol}	260	°C

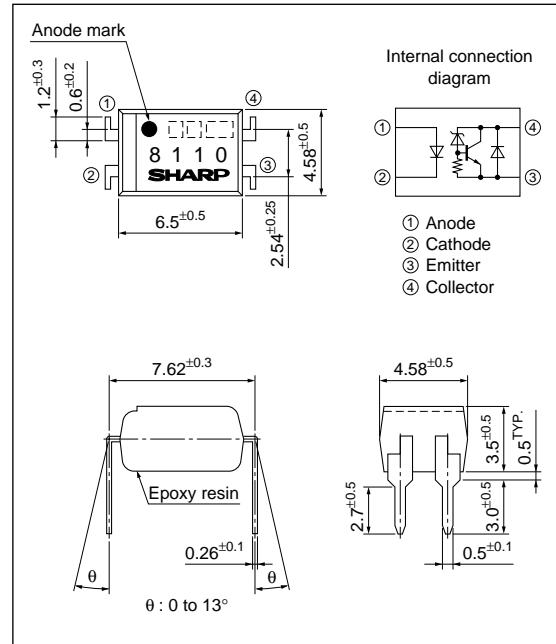
^{*1} Pulse width<=100μs, Duty ratio=0.001

^{*2} 40 to 60%RH, AC for 1 minute, f=60Hz

^{*3} For 10 seconds

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	V_F	$I_F=20\text{mA}$	-	1.2	1.4	V	
	Peak forward voltage	V_{FM}	$I_{FM}=0.5\text{A}$	-	-	3.0	V	
	Reverse current	I_R	$V_R=4\text{V}$	-	-	10	μA	
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	-	30	250	pF	
Output	Collector dark current	I_{CEO}	$V_{CE}=50\text{V}, I_F=0$	-	-	100	nA	
	*4 Collector-emitter breakdown voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	70	-	-	V	
Transfer characteristics	Collector current	I_C	$I_F=5\text{mA}, V_{CE}=5\text{V}$	2.5	-	20	mA	
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	-	0.15	0.35	V	
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	1×10^{11}	-	Ω	
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	-	0.6	1.0	pF	
	Response time	Not saturated	Rise time	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	-	3	20	μs
			Fall time		-	2	10	
		Saturated 1	Turn-on time	$V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=10\text{k}\Omega$	-	2	13	
			Storage time		-	9	50	
		Saturated 2	Turn-off time	$V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=100\text{k}\Omega$	-	23	90	
			Turn-on time		-	3	13	
Storage time			-		10	50		
Turn-off time			-		27	100		

*4 It has negative resistance characteristics due to built-in base-emitter resistance.
Please be careful not to apply voltage that exceed absolute maximum rating.

Fig.1 Forward Current vs. Ambient Temperature

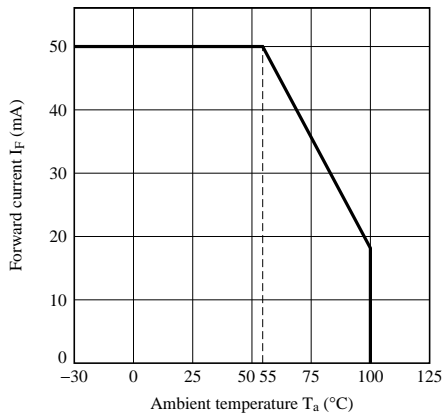


Fig.2 Diode Power Dissipation vs. Ambient Temperature

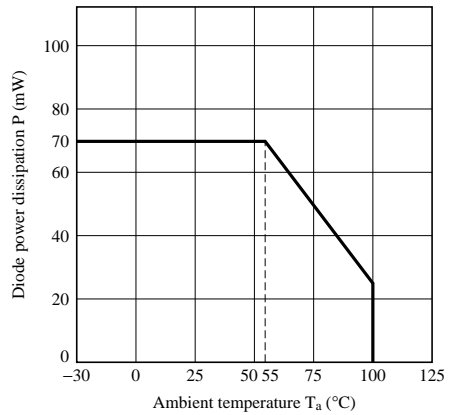


Fig.3 Collector Power Dissipation vs. Ambient Temperature

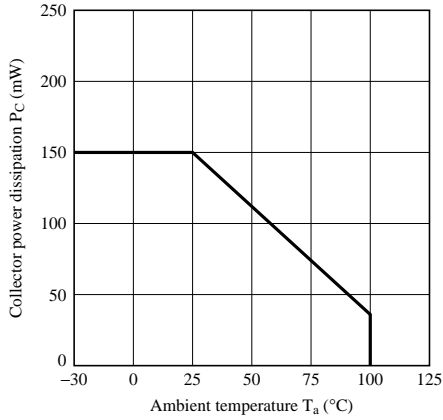


Fig.4 Total Power Dissipation vs. Ambient Temperature

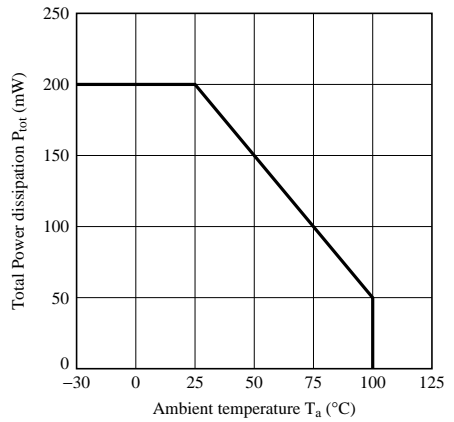


Fig.5 Peak Forward Current vs. Duty Ratio

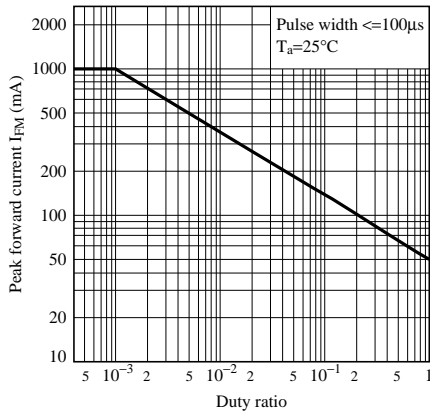


Fig.6 Forward Current vs. Forward Voltage

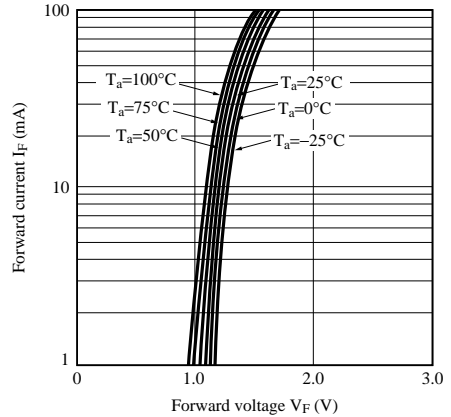


Fig.7 Current Transfer Ratio vs. Forward Current

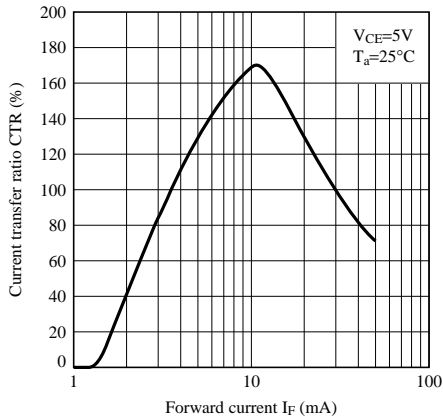


Fig.8 Collector Current vs. Collector-emitter Voltage

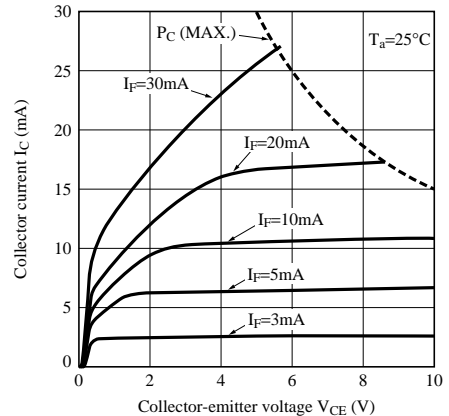


Fig.9 Relative Current Transfer Ratio vs. Ambient Temperature

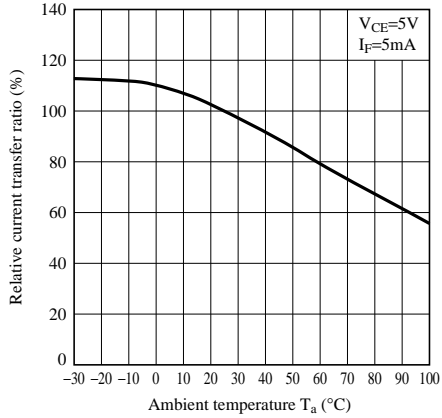


Fig.10 Collector - emitter Saturation Voltage vs. Ambient Temperature

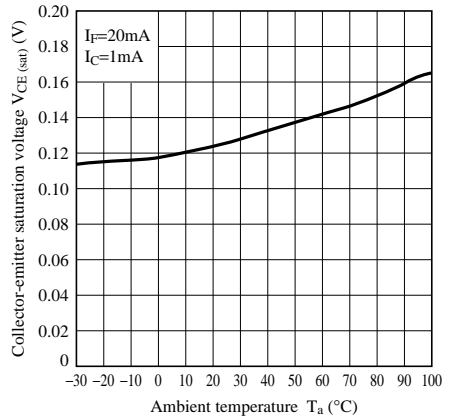


Fig.11 Collector Dark Current vs. Ambient Temperature

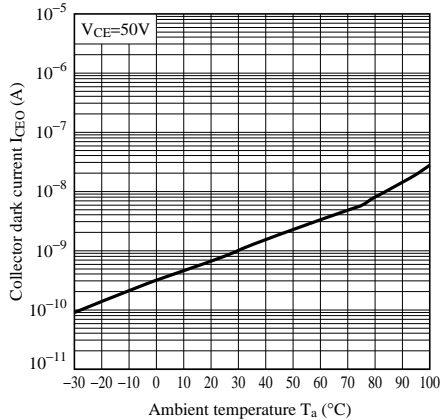


Fig.12 Response Time vs. Load Resistance (saturated mode)

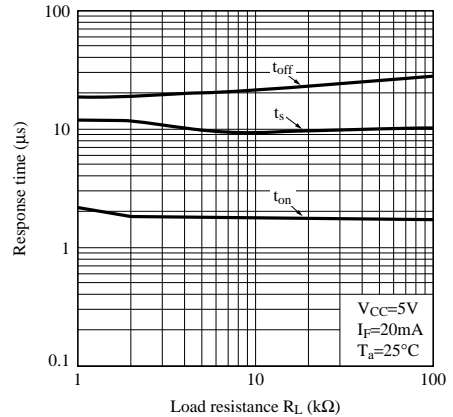


Fig.13 Response Time vs. Load Resistance (not saturated mode)

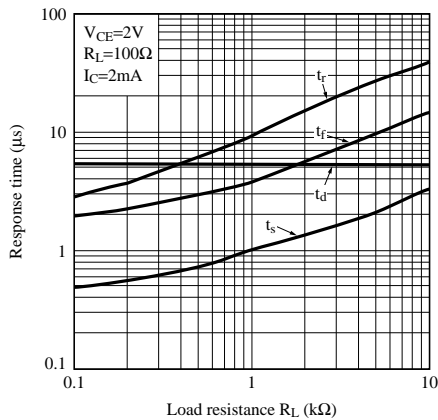


Fig.14 Voltage gain vs Frequency

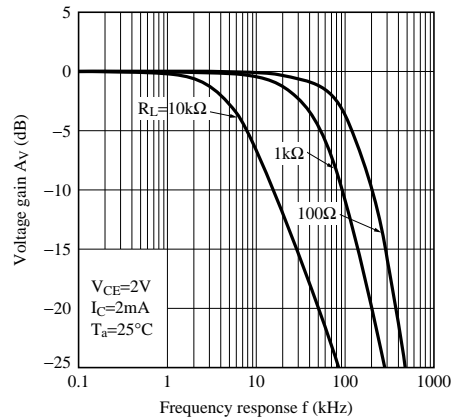


Fig.15 Collector-emitter Saturation Voltage vs. Forward Current

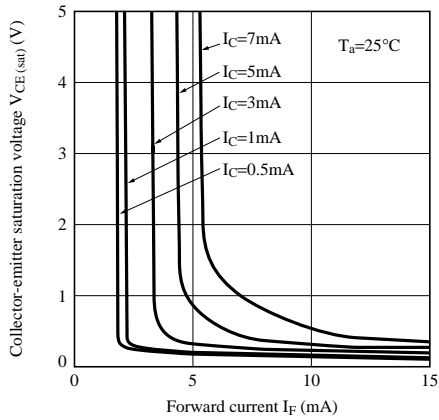
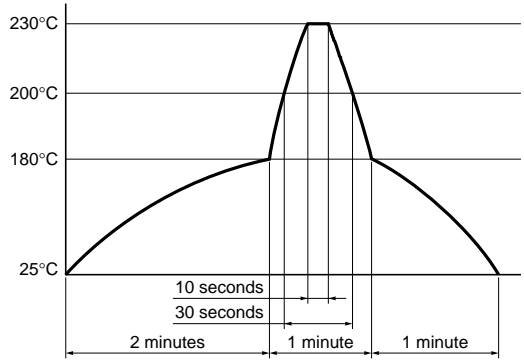


Fig.16 Reflow Soldering

Only one time soldering is recommended within the temperature profile shown below.



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